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RAMSEYS DRAFT AREA: A WILDERNESS TRAIL USER STUDY

by

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ABSTRACT

The Ramseys Draft Area is one of eleven wilderness areas created by the 1984 Virginia Wilderness Act. Development of a wilderness management plan for this new wilderness is directed by the Land and Resource Management Plan for the George Washington National Forest, signed by the Regional Forester in September 1986. The development of management action requires the acquisition of visitor data. This study was conducted in an effort to obtain this data.

A thorough analysis of current visitor use data is made. Visitor user characteristics from voluntary self-registration stations provided an accurate profile of the users. A survey was conducted on the weekend prior to big-game season to acquire additional data. Photoelectric trail counters were also used on five trails in an attempt to determine a correlation between visitors registered at the stations and numbers recorded on trail counters. Visitor use characteristics are evaluated and specific management actions with implementation guidelines are suggested.

EXECUTIVE SUMMARY

TRAIL USER STUDY

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The primary purpose of this study was to develop baseline data on recreational use in the Ramseys Draft Wilderness Area to facilitate planning activities and management actions. Specifically, this study focused on trail use patterns and the acquisition and analysis of visitor use data.

Visitor use data was collected by three methods: (1) voluntary self-registration cards; (2) survey; (3) photoelectric trail counters. Data collected under these systems were analyzed to determine the following characteristics: (1) estimated total visitor use; (2) periods of high visitor use; (3) mean group size; (4) length of stay; (5) residency; and (6) activity participating in. Compliance with the voluntary self-registration system was determined to be quite good at an overall average rate of eighty-five percent during the study period (late June 1986 to the first week in January 1987). A modified survey was used on the weekend of November 15 and 16, 1986 in an effort to acquire data from non-registrants, primarily hunters. The photoelectric trail counters provided data that was determined to be unreliable and was not used in the analysis phase of the study.

The majority of users (82 percent) utilized two trail locations as entrances to the wilderness area: Ramseys Draft Trail, and the South End of the Shenandoah Mountain Trail.

Periods of peak use were determined to be the months of October (25 percent) and November (29 percent). Weekend users (878) outnumbered weekday users (390) with 69 percent of the use occurring on weekends. Further analysis shows that weekend use was almost equally divided between Saturdays (36 percent) and Sunday (33 percent).

Mean group size of parties entering the Wilderness averaged 2.75 people and the length of stay averaged 3.01 nights.

71 percent of the visitors resided in the state of Virginia followed in popularity by residents of Maryland and Pennsylvania.

Hiking was the most popular activity (24 percent) but was closely followed by backpacking, camping, hunting, and nature study.

Analysis of the data developed a number of recommendations for the management of the Ramseys Draft Wilderness Area. These recommendations include (1) research needs, in particular the development of a "Limits of Acceptable Change" system to include (a) continued monitoring of the self-registration system; (b) installation of an additional registration station; (c) development of a campsite inventory program; (2) opportunities in the management of existing access roads and trails and possible future trails; (3) development of an Information and Education program; and (4) development of additional trail opportunities (trailhead facilities) in non-wilderness areas.

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I. INTRODUCTION

A. A Need for Wilderness Management

"Managing Wilderness is a new idea. It has really become an issue only in the last 10 to 20 years. The early leaders of the wilderness movement, men like John Muir, Aldo Leopold, and Bob Marshall, . . . were concerned with saving wilderness from development. They assumed that designating lands as wilderness and prohibiting road construction, logging, and similar uses would assure the preservation of wilderness--at least for the time being. "Draw a line around it and leave it alone", pretty well describes the prevailing opinion not so long ago. Even today it's shared by some. But a great many concerned people have concluded it just won't work with the kinds of pressure now descending on wilderness." (Hendee, Stankey and Lucas, 1978.)

Some say, "Wilderness management may seem to be a contradiction in terms, but a variety of pressures make management necessary." (Andrus, Bergland, 1977.). The concept of managing a wilderness area seems to be a paradox to some people (Nash, 1973). If it is a wilderness, what are resource managers doing, manipulating the area? However, this is what Nash and others have called for in order to keep the "wild" in wilderness.

The manipulation of a wilderness area is not so much as it pertains to the environment (although certain actions such as grazing, mining, access to private inholdings and the use of prescribed fire do significantly affect the area), but one of people management (Hendee, Stankey and Lucas, 1978). People management seeks to manage the effect human beings have on the area by modifying their actions to such a degree that they do not constitute a threat to the natural integrity of the area. This objective is to allow natural processes to proceed in an unaltered condition. "Managers should do only what is necessary to meet wilderness objectives and use only the minimum tools, force, and regulations required to achieve those objectives" (Hendee, Stankey and Lucas, 1978).

B. Impacts of Wilderness

Wilderness in the southeastern United States can be utilized on a year-round basis. However, in a recent survey of Southern Region District Rangers (Forest Service) with knowledge about 54 wilderness areas, only 10 of the areas were in the National Wilderness System before 1980. As such, use patterns have not been determined and, in fact, only 39% of the Rangers actually monitor use on wilderness areas. Of this, 50% of the managers were dissatisfied with the way use measurements were done (Draft Paper, Watson, Roggenbuck and Odom, 1986). Studies that have been completed for a few of the wilderness areas tend to show a heavy use period in the spring, moderate levels in

the summer, a drop-off in September, and an increase in October. (Brown, 1981; Lesman, 1985; Forest Service, 1986).

Although actual visitor use numbers for wilderness are sorely lacking, the physical impacts caused by these visitors are not. Popular destination areas are surrounded by campsites possessing no understory vegetation, compacted soil and damaged/dying trees. Campsites are easily identified by their fire rings, charcoal, ashes, litter, broken branches from surrounding trees, secondary trails and remains of shelters. Reports of "giardiasis" and other intestinal maladies are becoming more frequent as body waste becomes a problem around heavily used campsites. These are evident throughout the country, as indicated by literature reviews.

These impacts to the physical and biological resource base also have psychological effects on the wilderness user. Quality recreation experiences are being sought by the public, especially those associated with a wilderness experience. Studies have indicated that heavily used areas are less desirable than those with some notable attributes (solitude, pristine scenery, etc.), although visitors in heavily used areas tend to be somewhat more tolerant of impacts to the site than those in lightly used areas (Stankey, 1971, 1980).

C. Wilderness Management History of Ramseys Draft

The Ramseys Draft Wilderness Area (6,519 acres) has been historically managed essentially as wilderness since the land was acquired as National Forest in 1913. In the 1920's, 1794 acres in the headwaters of the drainage were classified as a Natural Area under the Secretary of Agriculture's Regulation L-20, and was to be used exclusively for scientific and educational purposes. A Forest Supervisor's Order was issued in May 1977, closing the area to motorized vehicles. In the following month (June), the RARE II study began. One result of the RARE II study was the recommendation that Ramseys Draft be included in the National Wilderness Preservation System. In October 1984, Ramseys Draft was officially designated a wilderness area.

Minimal wilderness management activity has occurred in the area since that time. In 1986, wilderness boundary signs and trail registration stations were installed, non-conforming trail signs, blazes, and structures were removed, and a campsite inventory program was started. A group of Forest Service specialists and citizens has been formed to begin development of a management plan for the area. Several meetings by the group have developed broad guidelines for management of the area, but no specific actions have been decided upon. Other than the normal restrictions associated with wilderness designation, there have been no additional limits or restrictions placed on the visitor.

D. Ramseys Draft: The Study Area

The Ramseys Draft Area is located on the Deerfield Ranger District, George Washington National Forest, approximately 18 miles northwest of Staunton, Virginia, (Figure 1). It is within a three hour drive from Richmond and Roanoke, Virginia, and a four hour drive from Washington, DC. The Land and Resource Management Plan for the George Washington National Forest estimates that 54 million people are within a one day drive to the Forest (Forest Service, 1986). As one of the newest designated wilderness areas in the East, there is a need to monitor recreational use in order to anticipate future problems and identify opportunities.

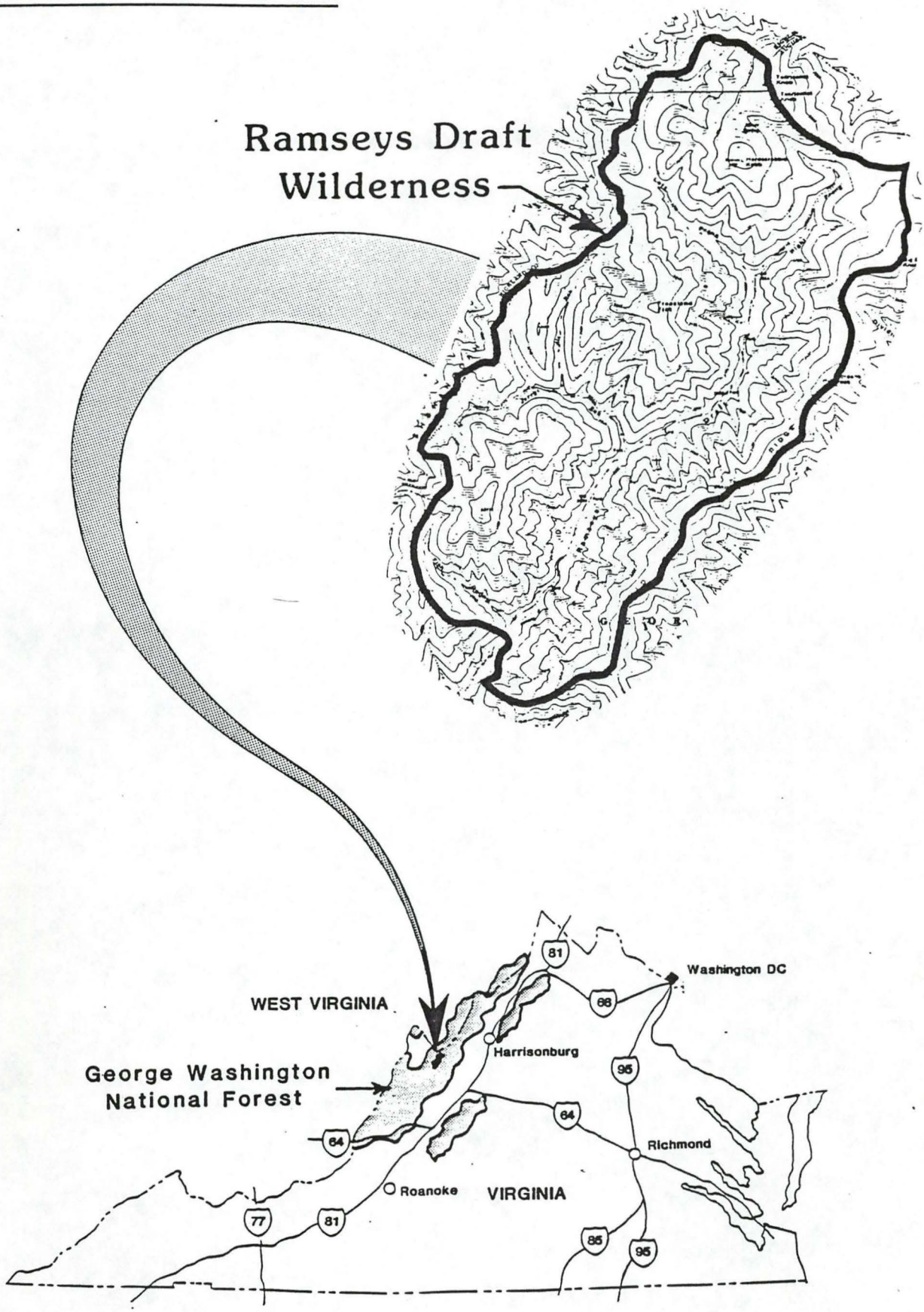
The 6519 acres of Ramseys Draft are classified as rugged and steep. Elevations range from 2,200 feet in the valley to 4,282 feet at Hardscrabble Knob. The horseshoe shape of the valley, in combination with the large white pine-hemlock overstory, typically accounts for this area being 5-10 degrees cooler than the surrounding valleys. Annual precipitation for the area averages 39 inches. Ramseys Draft and Jerrys Run, two streams in the wilderness, have native trout populations. No lakes exist, although a constructed wildlife water hole is present on the wilderness boundary at the intersection of Wild Oak and Bald Ridge Trails.

Access to the area is gained from any direction by 20 miles of Forest Service system trails. Two trailheads, Ramseys Draft Trail and the south end of the Shenandoah Mountain Trail, are on a paved double lane road (U.S. Route 250). An observation site with toilet facilities and a paved parking lot is present at the trailhead of the south end of the Shenandoah Mountain Trail, while a day use picnic area (tables, grills, hand pump, toilet facilities, and a separate parking lot for trail users) is present at the trailhead of Ramseys Draft Trail. Four of the remaining five trailheads are on graveled roads open for year-round use. The remaining trailhead (Sinclair Hollow) is accessed by a seasonal road opened from October through January, primarily for hunter use.

Steep terrain restricts use to the well established trails that are interconnected. The November 1985 flood destroyed the lower one-quarter mile of Jerrys Run Trail and the lower two miles of the Ramseys Draft Trail (Jerrys Run to the Ramseys Draft trailhead). Sections of the old trail can be found and, coupled with the vast number of log jams, cut banks and rock debris deposits, have funneled people into a self-developed trail corridor. Efforts to reconstruct or relocate these two and one-half miles of trails have yet to be undertaken.

Figure I

VICINITY MAP



Recreational use statistics for the wilderness area for FY 85 were: Day Use - 548 RVD's*; Camping - 370 RVD's. This amounts to approximately 1,298 day visits and 204 overnight camping visits. With the exception of one or two horse users, all visitors were on foot. The FY 85 use figures were based on estimates by the author and Recreation Technician for the Deerfield District.

Management goals and policies have yet to be formulated for the wilderness area. A working group has been established to formulate a management plan for the area and it is anticipated that the plan will be completed sometime in late 1987.

E. Problem Statement

In the past, most wilderness managers have reacted to impacts rather than anticipating them. As such, most objectives and policies have been written to address these problems and to try to improve current conditions. There is a need to understand the wilderness user and his characteristics so the manager can anticipate and plan for appropriate action.

In order to facilitate such plans, basic wilderness use information is essential. This study will provide baseline information which is necessary for measuring future trends and patterns, planning activities on the local level, improved management of the wilderness visitor and possible enhanced professionalism of wilderness managers (Roggenbuck and Lucas, 1986). This study will provide useful information to the Ramseys Draft Working Group, District Ranger and Forest Supervisor in the preparation of a wilderness management plan for Ramseys Draft. Specifically, this study will:

1. Determine trail use patterns,

2. Evaluate the following user characteristics:

    a. Date of use

    b. Home city and state

    c. Group size

    d. Day use and overnight use

    e. Length of stay

*RVD's - Recreation Visitor Days--12 hours of recreation use or possible combination of uses adding up to 12 hours of total recreational use.

f. Travel method

g. Activity participating in.

3. Based on 1. and 2. above, evaluate and recommend appropriate guidelines for managing the wilderness user within the context of the developing wilderness management plan.

F. Limitations

All findings and recommendations of this report will be limited to the Ramseys Draft Wilderness Area although the methodology used to determine these results is applicable elsewhere. Data collected during this study will be limited to the time period from late June 1986, to the first week of January 1987. It is acknowledged that use occurred before and after the study time period and such use is not accounted for. Use, particularly in the early spring of the year, may have some relevance in determining total visitor use and impacts. Caution must be used when generalizing from this document. Time constraints imposed on the author by other commitments, project completion date, financial costs and support personnel prevented the development of a data base on a year-round basis. It is also recognized that information is lacking on certain trails (validation rates and registrants), and, as such, it was necessary to rely upon analytical techniques of existing data.

II. LITERATURE REVIEW

A. Visitor Use Levels

"Wilderness is a fragile resource in both an ecological and an aesthetic sense. Management of wilderness faces the difficult challenge of providing for the use of these areas, while preserving the substantially unmodified ecosystem and the outstanding opportunities for solitude that are essential characteristics of wilderness. The impact of use on the wilderness cannot be understood or managed adequately without knowledge about the level and nature of that use." (Lucas, James, and Schreuder, 1971.)

Visitor studies of wilderness users have been made on a number of areas utilizing a variety of methods (James,1971). In most studies, basic data is gathered (such as use patterns, user trends and user characteristics), and can be utilized in a number of ways. Estimating use in wilderness can be used for budgeting purposes (Echelberger, Leonard, and Plumley, 1981; Lucas, 1983), development of techniques to minimize human impact, thus protecting wilderness values (Lucas, Cole and Stankey, 1985; Lucas and Kovalicky, 1981; and Petersen, 1985), and to provide baseline data of current conditions. This baseline data can be used to inventory existing conditions, suggest possible courses of action, and as a standard to measure future trends and patterns. Without baseline data, misconceptions can be made about existing guidelines and decisions made upon the misconceptions can have far greater impacts than the problem itself (Stankey, 1982). Roggenbuck and Watson (1985), state that it is the manager's responsibility to maintain, enhance and provide those wilderness values that Americans associate with their wilderness resource. They also state, that once the wilderness process is complete, management will be essential to meet the changing demands placed upon a static resource base.

Currently, there is a demand for the determination of visitor use levels in wilderness areas. There has always been a demand for this data from the manager in order to allocate his resources where they would do the most good (such as setting working schedules for wilderness rangers, trail layout, trail maintenance, etc.). Data is needed by planners at both the Forest and National levels. The recent and on-going development of Forest Land Management Plans has shown serious weakness in estimating future demands for dispersed and wilderness recreation (Forest Service, 1983). Watson, Roggenbuck and Odom (draft paper, 1986), point out that the Forest and Range Renewable Resource Planning Act largely depends on Forest Service data for the generation of use trend statistics, in particular, the Outdoor Recreation and Wilderness section. The accuracy of recreational use estimates is considered low (USDA, 1981), and the authors suggest that "evaluation of the accuracy of the estimates could enhance demand projection capabilities for RPA purposes." (Watson, Roggenbuck and Odom draft paper, 1986.)

B. Approaches to Visitor Use Levels

The method of determining visitor use levels can be either direct or indirect in nature. Direct methods are the regulatory ones (mandatory permits, quotas on trail use, limiting group size, etc.). Wuerthner (1985) objects to the use of heavy-handed regulatory control of individual freedom. The requirement of mandatory permits has been called the beginnings of a "police state wilderness" (Behan, 1974). Hendee, Stankey and Lucas (1978) agree that indirect management techniques should be the first choice in achieving management objectives. Their argument follows the premise that minimal regulation keeps the concept that wilderness is an open, free, undeveloped and unconfined place. Stankey (1973) found that most wilderness users prefer indirect management techniques.

The indirect methods can be characterized as manipulative in nature. Subtle and unobtrusive, they modify the users' behavior in such a manner that the user does not recognize the manager's attempt at manipulation. Voluntary self-registration systems, information and education programs, and the degree of (or lack of) trail maintenance, are all examples of manipulative control.

C. Determining Visitor Use Levels

A number of systems have been used in the gathering of data from recreational users, each with their own advantages and disadvantages. Leonard, Echelberger, Plumley and Van Meter (1980) evaluated and compared six methods used in gathering such data.

Leonard, Echelberger and Schnitzer (1978) stressed that these major user characteristics were needed: (1) use quantity (day and overnight use); (2) use distribution (trail use, use by month and day, and hiking route); and (3) overnight user patterns. Additional information that proved to be important in developing management strategies included group size, length of day, travel method, and activity participating in.

1. Voluntary Self-Registration Stations

Unstaffed trail registers to obtain information from backcountry users have been in existence for many years. The advantages of this system include low initial and maintenance costs, relatively easy portability and installation, and low vandalism rates (Wenger, 1964).

The biggest disadvantage to the system is that not all users sign in. A number of studies for mandatory and voluntary permits and registration cards indicate a variable compliance rate for registrants. Rates of compliance have varied between 18 and 89 percent (Forest Service, 1986; Godin and Leonard, 1977; James and Schreuder, 1971 and 1972; Leatherberry and Lime,, 1981; Lesman, 1985; Lucas, 1975 and 1983; Lucas, James and Schreuder, 1971; Lucas and Kovalicky, 1981; Pellerin, 1983; Wenger, 1964). Studies have shown that solo hikers, day users, local people, horseback riders, fishermen, and hunters have lower than average compliance rates (Lucas and Oltman, 1971). Suggestions to raise registration rates have been offered. Lime and Lorence (1974) suggested that education and publicity might be worth trying while Lucas (1975) suggested that stations be serviced frequently, station design be evaluated, bright colors be considered, and that station location be considered to improve compliance rates. Wenger (1964) also suggested that station locations have an effect on registration rates. Past studies (Lucas and Kovalicky, 1981; Petersen, 1985) indicate that stations located away from trailheads improve compliance rates. Lucas (1983) experienced lower rates of compliance in the Bob Marshall wilderness area than anticipated based on station location.

Sign wording has been found to influence registration, but to a lesser degree than location. Leatherberry and Lime (1981) found that hikers thought that a sign message explaining the need to register increased registration compliance. Wenger's test (1964) of unmanned registration stations on wilderness trails also indicated this. In a study to improve voluntary registration rates on trail registration stations, Petersen (1985) found that between a test of the old and new sign at the same location, the newly designed sign had a higher compliance rate. It appears that a simple "please register" with imagery (backpackers and horsemen), can be as effective as a more detailed sign.

Station maintenance is also crucial to registration rates. Lack of forms, pens or pencils will deter many visitors from registering. Lucas (1983) found that in the lack of supplies, some visitors have tried to register by using their own pieces of paper and pencils. Poorly maintained stations can give the impression that the manager is not really interested in the data. Frequent maintenance can also discourage acts of vandalism and loss of data collection (Lucas and Kovalicky, 1981).

2. Questionnaire

The use of a questionnaire in this study was a method of field sampling to determine the number of visitors in Ramseys Draft. Field sampling (interviewing wilderness users) has been used to

check the reliability of trail registrants in a number of studies (James and Schreuder, 1971; Lucas, 1975; Lucas, James and Schreuder, 1971; Wenger, 1964; Wenger and Gregerson, 1964). The degree of sophistication desired in field sampling depends upon the objectives of that study. Interviews can be as simple or complex as desired, from observations of numbers and directions of travel, to opinions and questions about the wilderness resource and user (Leonard, Echelberger, Plumley and Van Meter, 1980). Sampling used in conjunction with the trail registration system, as in this case, can improve the reliability of the system by providing a more accurate data base of users. Field sampling does have the disadvantage that a high number of samples must be taken in order to realize any degree of accuracy. Restrictions on the invasion of privacy offer users some degree of protection and strict guidelines must be adhered to.

3. Photoelectric Trail Counters

The use of photoelectric trail counters has produced variable results because of the system's reliability and accuracy. A number of studies (Bowley, 1977; James and Schreuder, 1971 and 1972; Lucas, James and Schreuder, 1971) indicate serious flaws in the collection of data. The problem of overcounting due to faulty installation (Tietz, 1973), undue sensitivity to rain and fog, plant and animal movements and vandalism are major concerns of this system. Periods of no data collection occur when batteries are weak or dead. An additional concern is that the system counts only objects breaking the scanner beam. Hikers and/or other wilderness users may or may not return in the same direction from which they came. Simply dividing the results by two will provide misleading information. Photoelectric trail counters seem to work best when used in conjunction with other measurement systems. Studies have indicated that the photoelectric trail counters can be used to trigger movie cameras (time-lapse photography) in order to record compliance with registration requirements (Leatherberry and Lime, 1981; Lucas, 1983; Lucas and Kovalicky, 1981; and Petersen, 1985).

III. PROCEDURE

The principal subject to be examined in this study is the wilderness trail user in Ramseys Draft. Constraints on the availability of personnel, equipment and time resulted in the selection of the voluntary self-registration system, photoelectric trail counters, and a modified field sample (questionnaire) as the measurement methods being used in this study. The desire to use indirect methods of obtaining this data eliminated the use of the mandatory permit system from consideration.

A. Subjects

1. Users - Use Characteristics - People registering upon entering or leaving the area (between late June, 1986 and early January, 1987) at voluntary self-registration stations (see Figure 2A).

2. Users - A Questionnaire - Developed on the same guidelines as the voluntary self-registration stations but to interview users on the weekend (November 15 and 16, 1986) before big game season began. This included both day and overnight users on four trails.

3. Users - Photoelectric Trail Counts - Numerical counts on a trail traffic counter which indicate objects crossing the infrared beam from the scanner to the reflector. The photoelectric trail counters were installed in mid-May, 1986, and removed in early January, 1987, on five trails (see Figure 2B).

B. Instrumentation

1. Wilderness Trail Registration Card - A trail registration card (Appendix A) was used to collect data on each party or person. The trail registration card provided the following information: date of entry, home city and state, group size, destination, day use or overnight, length of stay, travel method, and activities.

2. Questionnaire - A questionnaire was developed utilizing the same questions asked by the trail registration card (Appendix B). Volunteers obtained information in the field from users (primarily hunters) on the weekend of November 15-16, 1986. Studies in other wilderness areas show hunters to have statistically significant low registration rates (Lucas, 1975 and 1983; Lucas and Oltman, 1971; Wenger, 1964).

3. Photoelectric Trail Counters - Photoelectric trail counters were installed on five trails in an attempt to correlate the number of hikers passing by the counters and the number of those registering at the voluntary self-registration stations. The limitations of this are that it obviously counts objects breaking the sensor beam and nothing else, regardless of whether it is a hiker, deer, or merely brush movement.

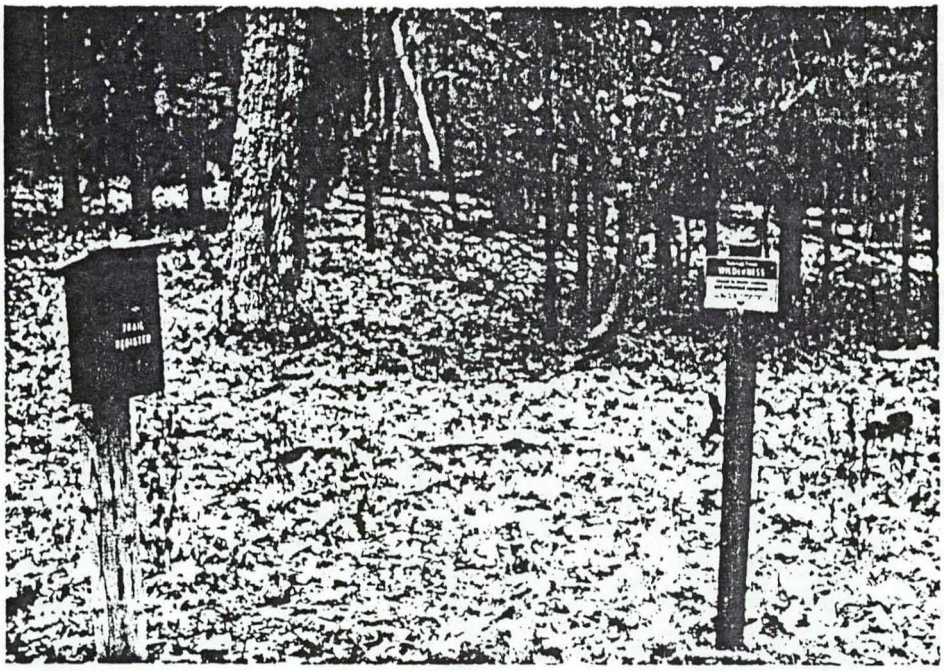


FIGURE 2A.

Trail registration station and wilderness boundary sign.

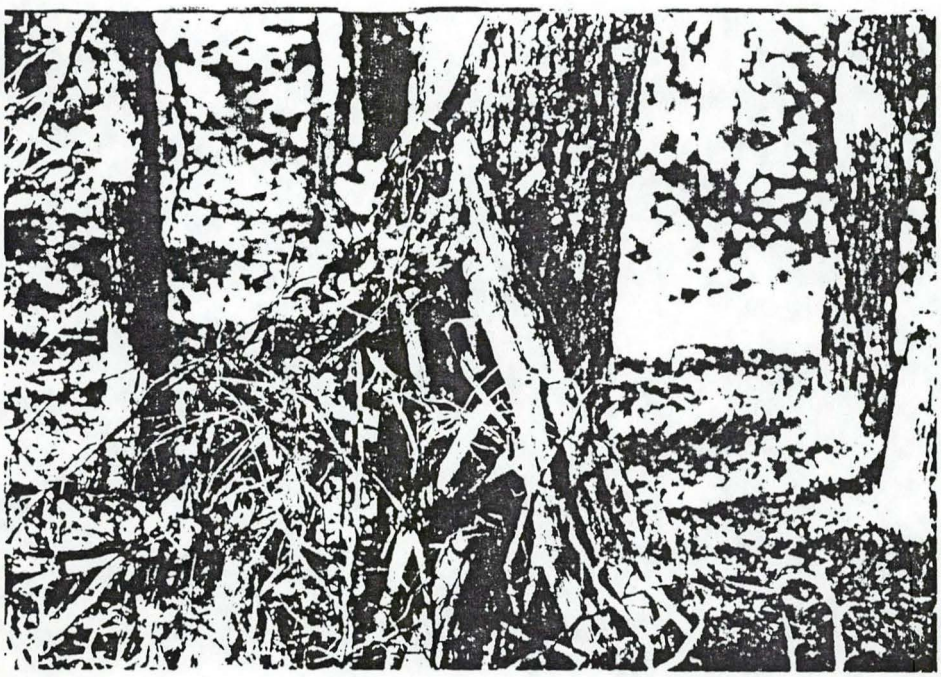


FIGURE 2B.

Photoelectric trail counters.

1. Collection of Data

1. Wilderness Trail Registration Card - Voluntary self-registration stations were installed on all trails (7) leading to the Ramseys Draft Area. Various studies have shown that sign visibility, station condition and location influence registration rates. With these items in mind, trail registration stations, with the exception of Ramseys Draft Trail, were located on ridge tops, ranging from two to three miles from the trailheads at the wilderness boundary. Access to these stations were on fairly steep trail grades and thus were placed at locations where it was anticipated that one would naturally rest. The south end of the Shenandoah Mountain Trail station, although on a ridge top, was on a gentle grade. The placement of the station near the intersection of another trail provided a logical resting place while orienting one's self. The Ramseys Draft Trail registration station was located in a flat area along the trail, approximately one-half mile from the trailhead.

   Wilderness boundary signs were placed adjacent to, or on, the opposite side of the trail from the registration station to draw attention to the registration station. Routed, yellow painted letters stating "Trail Register" were on the registration stations so users understood the purpose of the station. The registration card provided additional information on why information was needed.

   Regular checks by Wilderness Rangers showed a high compliance rate for three of the trails. An insufficient number of observations on the remaining trails resulted in these trails having unvalidated user sign-in rates. Sign-in rates were determined by Wilderness Rangers unobtrusively observingwilderness users from a distance as they passed the registration stations. Notes were written down detailing the number of users, sex, time entered and departed, whether they signed in or out at the registration station, and other observed features (types of packs--day use or backpacks, the presence of dogs, etc.). Observation periods ranged from four hours to nine hours. Wilderness Rangers removed registered cards at the beginning and end of the observation period. This action was taken so previous users who had registered before the observation period began would not have their cards mixed with those visitors who registered during the observation period (in case blank cards were placed in the station or were altered in such a manner that no usable data could be realized). Removal of deposited registration cards at the end of each observation period enabled Wilderness Rangers to quickly cross-check the data on the card with their written observations. Any discrepencies were noted (in this study, none were observed) and a compliance rate was quickly figured for the period of time (see Appendix C).

The stations were maintained on a weekly basis except for a three week period in September and during the two week deer rifle season (big game season, November 17-28). The stations were not disturbed or vandalized, with one exception. This exception occurred in early July on the Dividing Ridge Trail. The entire station was removed from the area and no trace of it was ever found. The Bald Ridge registration station was then moved to Dividing Ridge because (1) no registrations had occurred at this station, and (2) any user entering the wilderness area would eventually pass other registration stations unless the user backtracked on the trail. (This was considered highly unlikely because of the distance traveled, steepness of trail grade, poor trail conditions and lack of significant features along the trail.)

The majority of trail users followed the directions for completing the card and most provided complete data about the group. Only a few cards were unusable from all registration stations.

2. Questionnaire - The questionnaire was used on the weekend of November 15 and 16, 1986. The questionnaire was aimed specifically at hunters who historically have had poor compliance rates at self-service registration stations. An early winter snow storm on the evening of November 14 limited the availability of volunteers and accessibility of trailheads by those volunteers who helped on November 15. As a result of this storm, only four trailheads were canvassed. All interviewers were identified as volunteers and interviewed all trail users at a short distance past the trailhead.

   Since the questionnaire was an exact duplicate of the registration card, all registration cards were carefully checked during this two day period to ensure that no double counts of a user (questionnaire and self-registration station) occurred. Users who were interviewed and who also registered were counted only one time.

3. Photoelectric Trail Counters - Photoelectric trail counters were installed on five trails leading to the wilderness area. Checks were made periodically, ranging from three days to several weeks, to determine numerical counts and to maintain the counters (batteries). Unfortunately, overcounting by the trail devices provided data that was unreliable and was disregarded. Problems involved in the use of the photoelectric trail counters included tree movement during the periods of high wind, vandalism, undue sensitivity to both fog and rain, dead batteries, illegal ORV use on a closed trail (fortunately, natural barriers prevented their access into the wilderness area), and animals and birds breaking

the infrared beam. The data collection which began early in May, 1986, was plagued by the events and circumstances throughout the entire study period.

D. Treatment of Data

1. Wilderness Trail Registration Cards - Calculation of use frequencies, percentage rates, means and averages were made from the trail registration cards. This data is summarized to show percentage of total hikers by trail, mean group size by month and trail, registered monthly use by trail, day of week use by trail, length of stay, residence and activity. All treatment of the data was hand calculated by the author.

2. Questionnaire - Analysis of this data was confined to those visitors actually interviewed. Number of visitors interviewed, group size, time on trail, and residence were recorded. The author then cross-checked the data on the questionnaire with completed trail registration cards to ensure that no double counts occurred. The data was then calculated and combined with the wilderness trail registration card information.

3 Photoelectric Trail Counters - Numerical counts by the trail counters were recorded at various time intervals during the study period. Treatment of data was done manually by the author, but due to problems described in Section C, no reliable data were realized.

IV. ANALYSIS OF DATA

A. Use Characteristics

1. Rate of Compliance

The rate of compliance or validation factor is shown in Table 1. This determines the ratio of hikers who signed in to those that did not. It was anticipated that use of the area would be greater from those trails that accessed the paved highway (U.S. 250), than at the other trailheads, so a greater proportion of time was spent at these locations. At both the Ramseys Draft Trail and the south end of the Shenandoah Mountain Trail registration stations, compliance rates were above expectations. Due to time constraints and lack of personnel, no observations were made on three of the trails and a relatively small sample was possible on a fourth.

TABLE 1 - REGISTRATION RATES (OBSERVED)

STATION	NUMBER OBSERVED	NUMBER REGISTERED	HOURS OBSERVED	COMPLIANCE RATE
Ramseys Draft				
- Day Use	128	91		.71
- Overnight Use	43	37		.86
Total	171	128	164	.79 (Avg)
S. End Shenandoah Mountain				
- Day Use	17	15		.88
- Overnight Use	22	20		.91
Total	39	35	125.75	.90 (Avg)
N. End Shenandoah Mountain				
- Day Use	0	0		
- Overnight Use	0	0		
Total	0	0	0	0
Sinclair Hollow				
- Day Use	6	4		.67
- Overnight Use	0	0		0
Total	6	4	38	.67

Wild Oak				
- Day Use	0	0		
- Overnight Use	0	0		
Total	0	0	27	0
Dividing Ridge				
- Day Use	0	0		
- Overnight Use	0	0		
Total	0	0	14	0

The data shows a somewhat higher compliance rate for overnight users than for day users.

2. Estimating User Numbers

Table 2 displays the total number of registered users by trail. Using the calculated compliance rates for each trail, the number of unregistered users can then be determined. It was felt that based on the fairly high rates of compliance on the observed trails, the possibility of high rates of compliance on the other trails would also be true. It was decided to assign a 50 percent compliance rate to the trails with no observations on the premise that half of the users signed it and half did not.

TABLE 2 - ESTIMATED NUMBER OF TOTAL HIKERS

STATION	NUMBER REGISTRANTS	PERCENTAGE SIGN-IN	ESTIMATED UNREGISTERED	ESTIMATED TOTAL HIKERS
Ramseys Draft	757	.79	159	916
S. End Shenandoah Mountain	278	.90	28	306
N. End Shenandoah Mountain	23	.50*	12	35
Sinclair Hollow	49	.67	16	65
Wild Oak	53	.50*	27	81
Dividing Ridge	108	.50*	54	162
Total	1268			1565

*No observations, based on actual data from the trail; it was felt that a 50 percent compliance rate was a conservative estimate.

Based on a compliance rate at the 95 percent confidence level, the rate of error was calculated for each trail:

Ramseys Draft Station - 6 percent
S. End Shenandoah Mountain Station - 9 percent
Sinclair Hollow Station - 39 percent

No compliance rate of error was calculated for the remaining trails as no observations were made.

Adjusting the estimated number of users by the low side of the percent of error, the population during the study period was:

Ramseys Draft Station - 1095 users
S. End Shenandoah Mountain Station - 312 users
N. End Shenandoah Mountain Station - 35 users
Sinclair Hollow Station - 70 users
Wild Oak Station - 81 users
Dividing Ridge Station - 162 users

Total Users - 1755

3. User Characteristics - Registration Cards

a. Monthly Use

Table 3 shows the number of registered hikers by month and trail. Figure 3 graphically illustrates percentage of total use by month, while Figure 4 illustrates percentage of registered hikers by month and trails.

TABLE 3 - MONTHLY USE (REGISTERED)

STATION	JUNE	JULY	AUG	SEP	OCT	NOV	DEC	JAN	TOTAL
Ramseys Draft	28	151	108	73	174	170	45	8	757
S. End Shenandoah Mountain	-	8	57	53	71	85	4	-	278
N. End Shenandoah Mountain	-	-	5	4	12	2	-	-	23
Sinclair Hollow	-	-	8	3	3	33	2	-	49
Wild Oak	-	1	15	-	12	24	1	-	53
Dividing Ridge	-	-	3	9	35	59	2	-	108
Total	28	160	196	142	307	373	54	8	1268
Percent	2	13	15	11	25	29	4	1	100

FIGURE 3: PERCENTAGE OF TOTAL USE BY MONTH

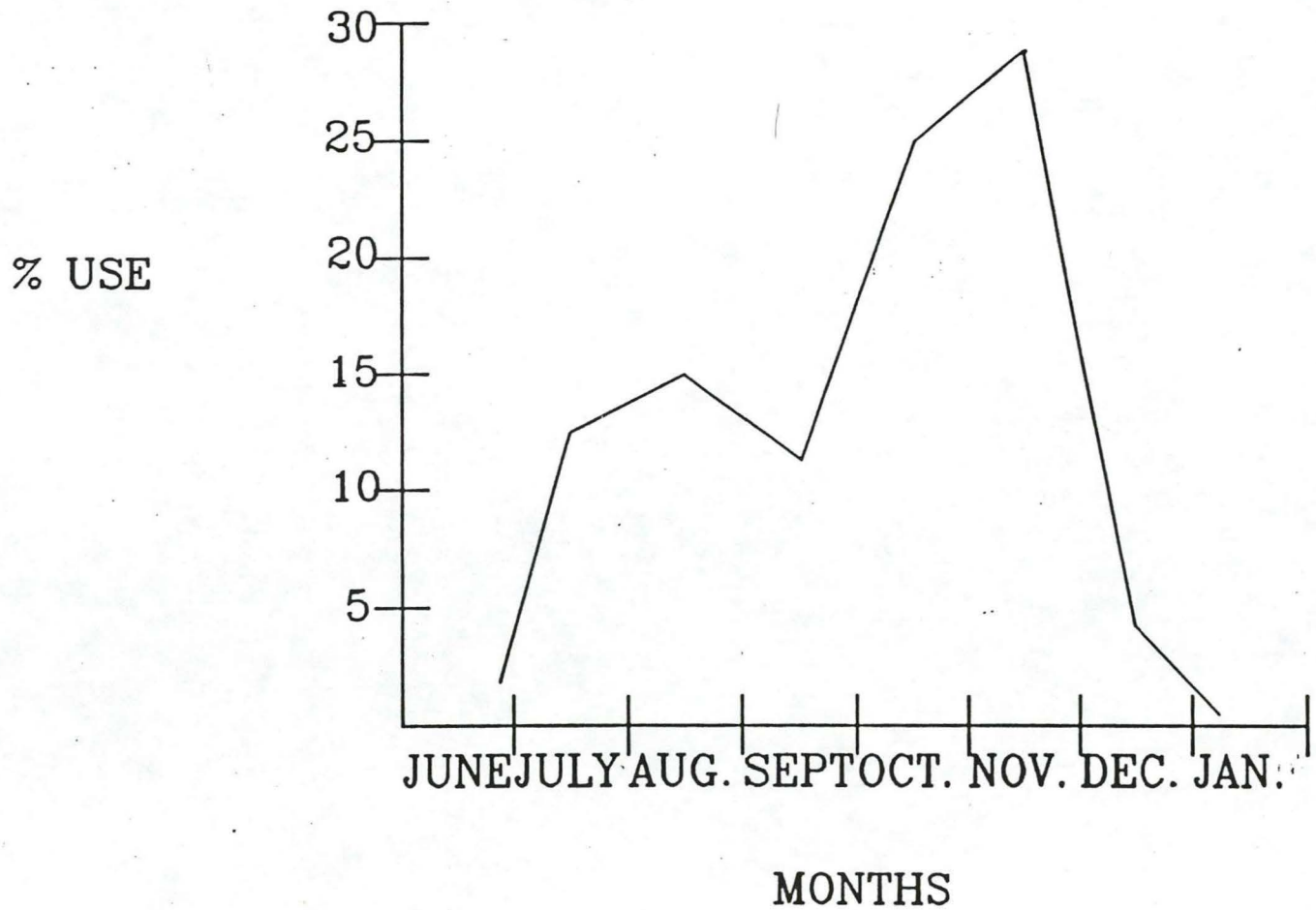
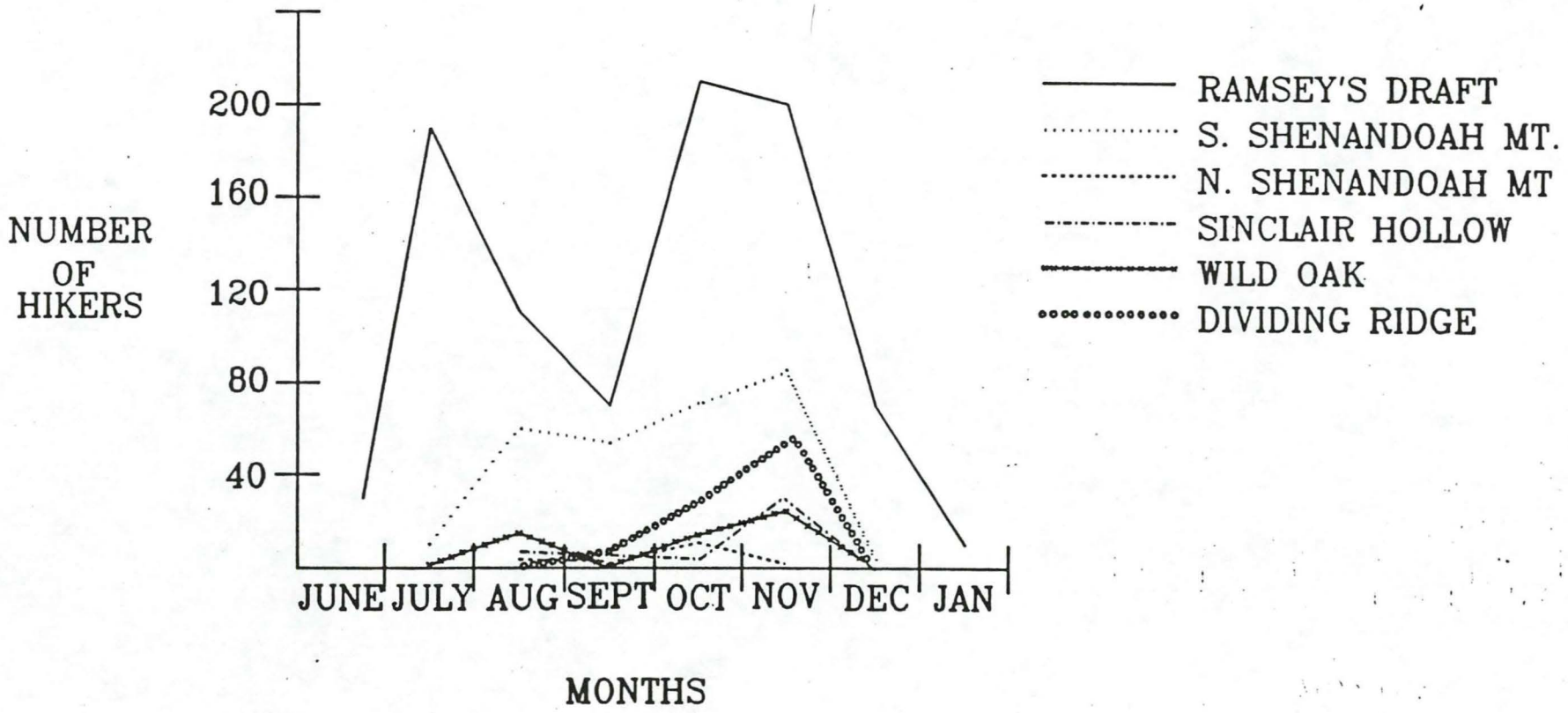


FIGURE 4: REGISTERED HIKERS BY MONTH



From Table 3, it can be noted that the number of registered hikers for the Ramseys Draft Area remained fairly stable (between 11 and 15 percent of the total) for the months of July, August, and September. Use jumped significantly in October with the advent of cooler, clear days, archery season, and the changing fall colors. The increasing trend continued into the month of November when big game hunting season opened (two-week deer rifle season). The charts illustrate that the December drop in use is just as dramatic as the October-November increase. It is speculated that the closing of deer hunting season, the advent of colder weather and other commitments (Christmas Holiday Season) were significant factors in this dramatic decrease.

b. Day Use

Table 4 displays the numbers of registered hikers by month, trail and by weekday versus weekend use.

TABLE 4 - NUMBER OF REGISTERED HIKERS BY MONTH

RAMSEYS DRAFT

MONTH	REGISTERED HIKERS	WEEKDAY HIKERS	WEEKEND HIKERS
June	28	28	0
July	151	95	56
August	108	25	83
September	73	30	43
October	174	55	119
November	170	18	152
December	45	16	29
January*	8	0	8
Total	757	267	490

TABLE 4 (continued)

MONTH	REGISTERED HIKERS	WEEKDAY HIKERS	WEEKEND HIKERS
	S. END SHENANDOAH MOUNTAIN		
July	8	0	8
August	57	6	51
September	53	3	50
October	71	31	40
November	85	24	61
December	4	2	2
January*	0	0	0
Total	278	66	212
	N. END SHENANDOAH MOUNTAIN		
July	0	0	0
August	5	0	5
September	4	0	4
October	12	0	12
November	2	1	1
December	0	0	0
January*	0	0	0
Total	23	1	22
	SINCLAIR HOLLOW		
July	0	0	0
August	8	0	8
September	3	1	2
October	3	1	2
November	33	6	27
December	2	2	0
January*	0	0	0
Total	49	10	39

TABLE 4 (continued)

MONTH	REGISTERED HIKERS	WEEKDAY HIKERS	WEEKEND HIKERS
	WILD OAK		
July	1	0	1
August	15	10	5
September	0	0	0
October	12	9	3
November	24	10	14
December	1	1	0
January*	0	0	0
Total	53	30	23
	DIVIDING RIDGE		
July	0	0	0
August	3	0	3
September	9	2	7
October	35	11	24
November	59	3	56
December	2	0	2
January*	0	0	0
Total	108	16	92

It is interesting to note that with the exception of the Wild Oak Trail Station, where use was nearly the same for both weekday and weekend users, the stations reported a 40 percent or greater use rate on weekends than weekdays. These results are expected as more recreationists have weekends off from work and school. Table 5 displays a

*All data for the month of January is dated January 7, 1987.

breakdown in use by day on each trail. Low use levels were recorded on Mondays through Thursdays, with an increase on Fridays and significant use levels on Saturdays and Sundays. Saturdays and Sundays were nearly identical in use with rates of 36 percent and 33 percent, respectively, for each day.

TABLE 5 - DAY USE

STATION	SUN	MON	TUE	WED	THU	FRI	SAT	TOTAL
Ramseys Draft	292	12	28	35	81	111	198	757
S. End Shenandoah Mountain	54	8	10	18	4	26	158	278
N. End Shenandoah Mountain	-	1	-	-	-	-	22	23
Sinclair Hollow	14	4	4	-	-	2	25	49
Wild Oak	16	-	2	5	6	17	7	53
Dividing Ridge	42	-	5	1	5	5	50	108
Total	418	25	49	59	96	161	460	1268
Percent	33	2	4	4	8	13	36	100

c. Mean Group Size

The mean group size of users in Ramseys Draft is presented in Table 6 by month and trail. Several large groups (three in July on the south end of Shenandoah Mountain Trail Station and one in August on the Wild Oak Trail Station) were significant factors in determining mean group size. Although the majority of users were two to three members in size, several organized groups (Boy Scouts, Church groups, hunters, etc.) increased the mean size. Overall average mean group size is 2.75 for all users. Figure 5 graphically illustrates this breakdown.

TABLE 6 - MEAN GROUP SIZE BY MONTH

STATION	JUL	AUG	SEP	OCT	NOV	DEC	JAN	TOTAL
Ramseys Draft	3	3	3	4	3	3	3	1.1
S. End Shenandoah Mountain	8	3	4	3	4	2	-	4.0

FIGURE 5: MEAN GROUP SIZE BY MONTH FOR 1986

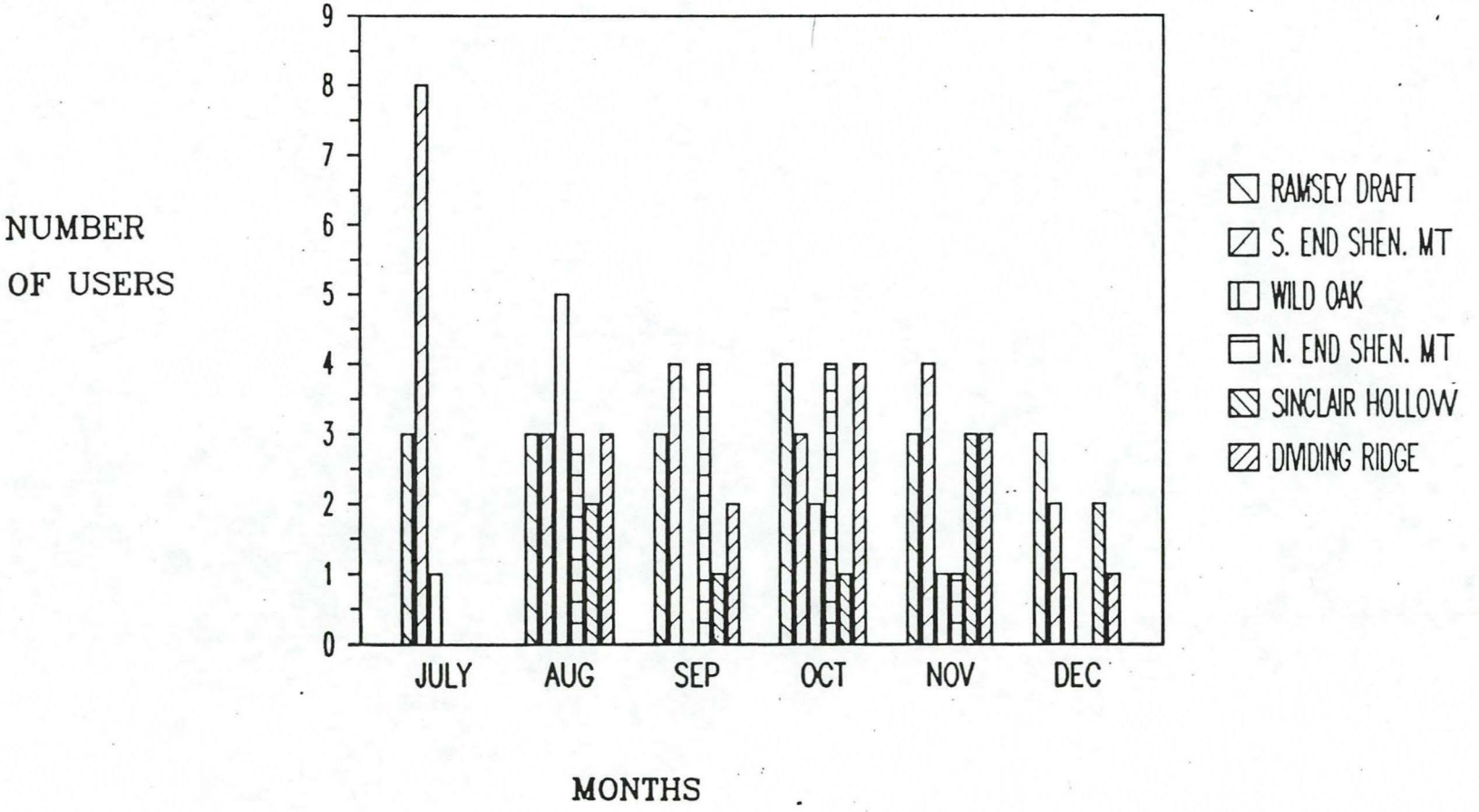


TABLE 6 (continued)

STATION	JUL	AUG	SEP	OCT	NOV	DEC	JAN	TOTAL
N. End Shenandoah Mountain	0	3	4	4	1	-	-	3.0
Sinclair Hollow	-	2	1	1	3	2	-	1.8
Wild Oak	1	5	-	2	1	1	-	2.0
Dividing Ridge	-	3	2	4	3	1	-	2.6

d. Length of Stay

Table 7 breaks down the number of registered hikers by trail, month and time spent on the trail during the study period. Ramseys Draft was expected to have a fairly high number of day users due to its proximity to U.S. Route 250. Analysis of the data validates this expectation. The remaining trails, due to steep grades and hiking distance to the wilderness boundary, were expected to have greater overnight use than day use. With the exception of Wild Oak this also proved true. The data from Wild Oak is skewed by the large day use group that was present on the trail in August. This group also accounted for the high group size that month.

TABLE 7 - TIME ON TRAIL BY REGISTERED HIKERS

RAMSEYS DRAFT

MONTH	1 DAY	2-13 DAYS	2+ WEEKS
June	-	28	
July	67	84	
August	68	40	
September	35	38	
October	82	90	
November	70	100	
December	33	12	
January	4	4	
Total	359	398	

TABLE 7 (continued)

MONTH	1 DAY	2-13 DAYS	2+ WEEKS
S. END SHENANDOAH MOUNTAIN			
July	8	-	
August	30	27	
September	13	40	
October	24	47	
November	17	66	2
December		4	
January	-	-	-
Total	92	184	2
N. END SHENANDOAH MOUNTAIN			
July	-	-	-
August	3	2	-
September	-	4	-
October	3	4	5
November	1	1	-
December	-	-	-
January	-	-	-
Total	7	11	5
SINCLAIR HOLLOW			
July	-	-	-
August	4	4	
September	3	-	-
October	1	2	-
November	10	23	-
December	-	2	-
January	-	-	-
Total	18	31	-

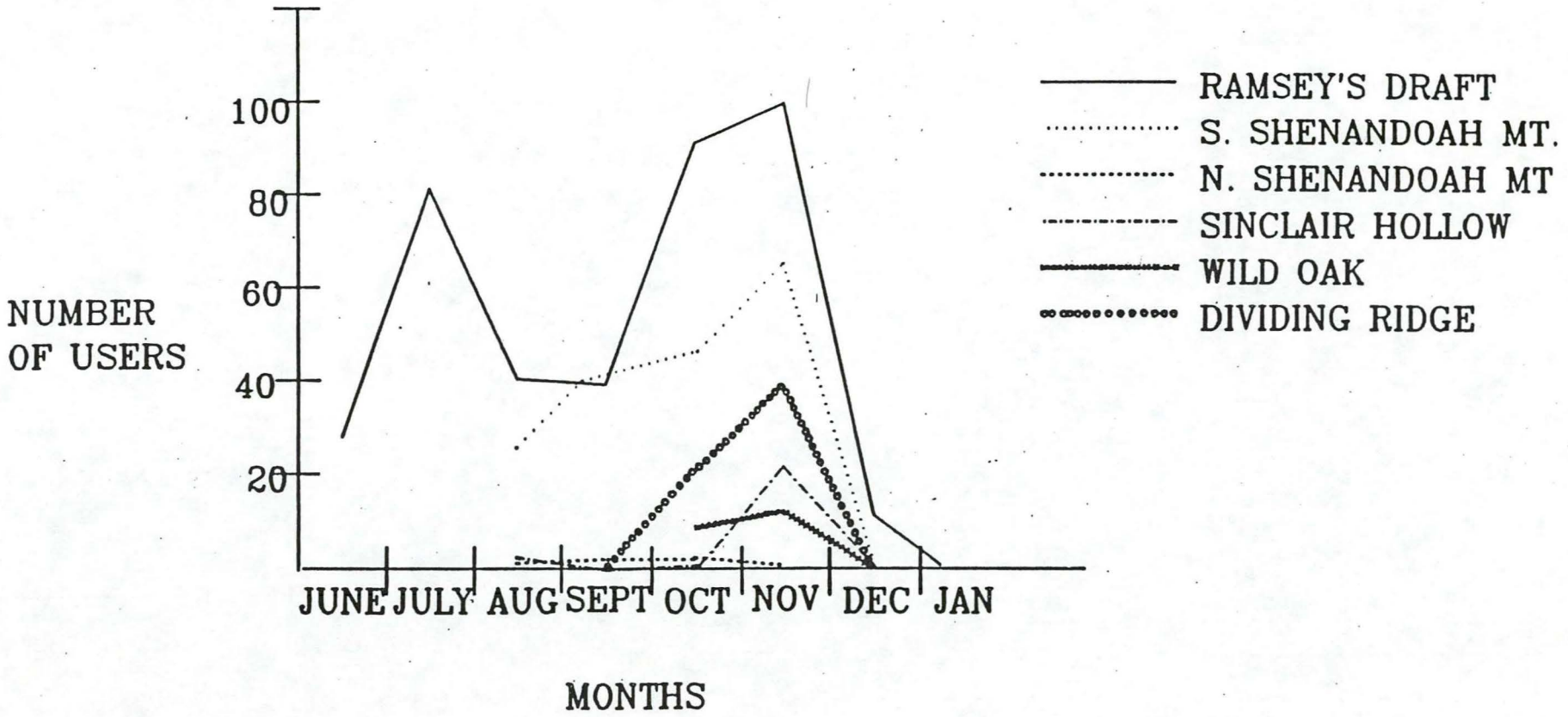
TABLE 7 (continued)

MONTH	1 DAY	2-13 DAYS	2+ WEEKS
	WILD OAK		
July	1	-	-
August	15	-	-
September	-	-	-
October	4	8	-
November	11	13	-
December	1	-	-
January	-	-	-
Total	32	21	
	DIVIDING RIDGE		
July	-	-	-
August	3	-	-
September	5	4	-
October	14	21	-
November	20	39	-
December	2	-	-
January	-	-	-
Total	44	64	

The data shows that overnight use increased significantly in October and November, which correlates with the increase in users during these months. Figure 6 graphically illustrates this point. Ramseys Draft had a significant and unexplained increase of use in July for overnight campers.

Analysis of the data determined that most overnight users (77 percent) spent one or two nights in the area. Mean overnight use averaged 3.01 nights when all overnight users were figured into the analysis.

FIGURE 6: OVERNIGHT USE BY TRAIL



e. Residency

Users were asked to indicate their city and state of residence on the registration cards. The majority of the users just wrote their state of residence. As shown in Table 8, 16 states were represented, although three states (Virginia, Maryland and Pennsylvania) accounted for 91 percent of the total. As expected, most users were from Virginia (71 percent).

Two interesting items noted are the number of users from Maryland at the south end of the Shenandoah Mountain station, and the number of users from Pennsylvania at Dividing Ridge. The high number of users from Maryland at the south end of the Shenandoah Mountain station can partially be explained by those belonging to the Potomac Appalachian Trail Club (PATC). This trail club is headquartered in Washington, DC, and has a number of members from Maryland. The Club once had a cabin just east of the intersection of Jerrys Run Trail and Shenandoah Mountain (one-half mile east of the trail registration station), and had maintained the trails in the area for a number of years. The cabin, which has now been removed, was situated in an ideal camping area. The site is now fairly open, but has shade, is within easy walking distance from the trail-head, and has a spring situated nearby. It is currently a destination place for a number of overnight users. It is speculated that many were familiar with the area and were drawn to it again.

It is difficult to explain why there are so many visitors from Pennsylvania at the Dividing Ridge station. Many of the Pennsylvania visitors interviewed during the questionnaire phase at Dividing Ridge Trail indicated they had previously utilized the area for hunting purposes. Several users indicated they had come back to the same spot for the last 12-13 years. Since the Pennsylvania deer hunting season begins a week later than Virginia's, there seems to be some merit to their statements.

f. Activity

Table 9 displays the type of activity participated in by month.

TABLE 8 - RESIDENCE

STATION	VA	MD	NJ	PA	DC	IN	NY	DE	KY	FL	OH	TX	NC	TN	WV	MA	TOTAL
Ramseys Draft	574	73	4	61	9	-	6	-	-	4	6	2	-	6	11	1	757
S. End Shenandoah Mountain	183	58	-	2	8	2	4	-	-	-	-	-	2	-	19	-	278
N. End Shenandoah Mountain	21	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	23
Sinclair Hollow	43	2	-	-	-	-	-	-	4	-	-	-	-	-	-	-	49
Wild Oak	24	4	-	9	10	-	-	3	-	-	-	-	-	-	3	-	53
Dividing Ridge	55	-	-	43	-	-	-	3	-	-	-	-	2	5	-	-	108
Total	900	137	4	115	29	2	10	6	4	4	6	2	4	11	33	1	1268
Percent	71	11	*	9	2	*	1	*	*	*	1	*	*	1	3	*	99**

*Less than 1%

**Less than 100% due to rounding

TABLE 9 - ACTIVITY BY MONTH

MONTH	HIKING	BACK-PACKING	CAMPING	HUNTING	PHOTO-GRAPHY	NATURE STUDY	BIRD WATCHING	FISHING	HORSE BACK
June	-	28	28	-	-	-	-	-	-
July	125	74	81	1	59	97	68	11	-
August	128	68	46	2	39	62	16	2	-
September	85	73	73	15	34	55	21	8	-
October	178	129	94	61	52	92	48	-	6
November	102	70	74	286	29	36	8	7	-
December	34	16	5	12	1	14	11	1	-
January	2	-	-	-	-	2	2	-	-
Total	654	458	401	377	214	358	174	29	6
Percent	24	17	15	14	8	13	7	1	1

Analysis of the data showed that few individuals checked only one item on the registration card, and that the majority checked several items. No significant correlations could be made between any activity, in particular, between the activities of hiking, backpacking, and camping. Review of the study project reveals a need to rephrase the card to delineate between day use (hiking) and backpacking. Once this can be accomplished, a significant correlation could probably be determined.

Two items of interest shown from analysis of the data are, (1) a high number of users are interested in nature study during the summer months, and (2) virtually no horse use occurs in the wilderness area. The absence of horse use may be explained by the fact that there are no facilities readily available to horse users, and the trails are not designed or maintained for horses.

4. User Characteristics - Questionnaire

Table 10 displays a summary of the survey data that was collected during the weekend of November 15-16, 1986.

The data was closely cross-checked with registration cards to protect against double counting. The questionnaire data were then combined with trail registration card data and used in analysis in Section 3, Parts A-F.

5. User Characteristics - Photoelectric Counters

The data acquired by the photoelectric counters proved to be unreliable. Checks by the author and wilderness rangers involving known time periods and users, resulted in a tremendous number of overcounts. Other problems, as described in Section III, resulted in time lapses of no data collection. This data was disregarded and not used in this study.

TABLE 10 - VISITOR SURVEY RESULTS

STATION	NUMBER OBSERVED	GROUP SIZE	TIME ON TRAIL			RESIDENCE				
			1 DAY	2-13 DAYS	2+ WEEKS	VA	PA	MD	WV	NC O
Ramseys Draft	79	3	41	38		40	21	14		
S. End Shenandoah Mountain	32	5	4	28		6	2	6	16	2
Wild Oak	7	1	5	2		5	2			
Dividing Ridge	6	3		6			6			
Total	124	3	50	74		51	31	20	16	2

V. SUMMARY AND CONCLUSIONS

It is the broad objective of this study to provide baseline information on recreational use in the Ramseys Draft Wilderness Area, facilitate planning activities and management actions and to possibly enhance the professionalism of wilderness managers. Specifically this study focused on trail use patterns and the evaluation of characteristics of the wilderness user.

All recreational use data were obtained from wilderness registration cards and a questionnaire conducted by surveyors on the weekend of November 15 and 16, 1986. Both the registration cards and questionnaires provided basic use information. A third system of photoelectric trail counters provided inadequate information, and was not utilized in the analysis of data.

A. USER CHARACTERISTICS

The majority of registered users entered the Ramseys Draft Wilderness Area from one of two trail locations, Rameys Draft Trail (60 percent) and the south end of the Shenandoah Mountain Trail (22 percent).

The months of October and November proved to be the most heavily used periods: October accounted for 25 percent of the trail use, and November 29 percent.

Analysis of weekend and weekday users (878 users to 390 users), show a 69 percent total use figure on weekends. A further breakdown of the data shows that Saturday accounted for 36 percent of the total use and Sunday accounted for 33 percent of the use.

The mean group size of parties entering the Ramseys Draft Wilderness Area was 2.75 people.

Average length of stay for overnight users was 3.01 nights, although the majority of users (77 percent) stayed only one or two nights.

Visitors to the Ramseys Draft Wilderness Area showed a residency rate of 71 percent from Virginia, 11 percent from Maryland and 9 percent from Pennsylvania.

Hiking was the most popular activity of registered users (24 percent) but followed closely by backpacking, camping, hunting and nature study (17, 15, 14 and 13 percent of the total use respectively).

The compliance rate for the two most heavily used stations was considered very good with a 79 percent compliance rate at the Ramseys Draft Trail station and a 90 percent rate at the south end of the Shenandoah Mountain Trail station. Based upon the 95 percent confidence level,1755 estimated users visited the Ramseys Draft Area during the study period. Analysis of the study data shows visitor use levels for Ramseys Draft is calculated at 319 recreation visitor days for day use, and 989 recreation visitor days for overnight use, for a total of 1,308 recreation visitor days. These figures differ significantly from those given in Section I.

VI. RECOMMENDATIONS

The principal objective of this study was to establish baseline data to measure future use trends and patterns. Another objective was utilization of this information in the planning and management for the wilderness user in Ramseys Draft in order to preserve the integrity of the area as natural processes unfold. A series of recommendations have been made.

A. Management Recommendations

Management techniques can either be direct or indirect in nature. Stankey (1973) found that most wilderness users prefer indirect management techniques and Hendee, Stankey and Lucas (1978) argue that direct management techniques be used whenever indirect means cannot achieve wilderness management objectives. Since Ramseys Draft is one of several newly created wilderness areas in the East, it is felt that indirect methods should be implemented to determine their success before direct techniques such as quotas, mandatory permits and prohibitions are used.

1. Research needs can be applied in the development of management goals and objectives.

   a. Continue to monitor the voluntary self-registration stations until a satisfactory data base is formed. Time constraints in this project prevented late winter to mid-summer sampling. Lack of information during this time period could have significant implications. In addition, a larger sample of observations is necessary to determine compliance rates on four trails (north end of the Shenandoah Mountain Trail, Dividing Ridge Trail, Wild Oak Trail, and Sinclair Hollow Trail). This study indicates that optimal time periods to acquire data should be on weekends in October and November.

   b. Install a trail regististration station on Bald Ridge Trail. The data from this trail is still required to fully study visitor use levels in Ramseys Draft.

   c. Expand the campsite inventory program. A pilot program was initiated in late summer of 1986, but due to time constraints limited data was acquired. This program should be pursued and given high priority in coming years to fully measure visitor impacts.

2. There are opportunities in the management of trails and roads to influence use levels in Ramseys Draft.

   a. Altering the major access routes to Ramseys Draft is neither practical nor feasible. The opportunity to alter the seasonal management of Shaws Fork Road is possible. This road leads to the trailhead of Sinclair Hollow, and currently is opened from the second Saturday in October to the first weekend in January. The road, when closed, adds approximately one-half mile of walking distance to the trailhead. Shaws Fork could be totally closed to discourage use, or upgraded to encourage more use through the Sinclair Hollow trailhead. Since the present low grade road makes

it difficult to access the area, few people use it. It is recommended that the road be permanantly closed to motor vehicles, and that the existing road be ripped and seeded. A trail can be constructed utilizing a portion of the old road to provide access to Sinclair Hollow.

b. Opportunities are limited for constructing additional trails in the area, but two possibilities have been noted. One trail would be constructed outside the wilderness area. It would connect the Ramseys Draft trailhead parking lot with the parking lot located at the south end of the Shenandoah Mountain Trail. This would create a true loop trail from Shenandoah Mountain through Jerrys Run through Ramseys Draft and back to Shenandoah Mountain. Use would be encouraged in the area beyond current levels. It is very inconvenient in the present system to leave one vehicle at Ramseys Draft and another at the south end of Shenandoah Mountain . Construction of this trail is not recommended as it would invite additional users to the area's two most heavily used access routes.

The second trail would be constructed east from the Ramseys Draft parking lot to a ridge where it would join the Bald Ridge Trail. The construction of a trail bridge may be necessary to cross Ramseys Draft during periods of high water if use levels are justified (this section of bridge construction would occur outside the wilderness boundary). The construction of this trail is recommended as it would distribute users to the Bald Ridge Trail which is not well known or heavily used at this time. It is anticipated that use figures for Ramseys Draft Trail would decrease as visitors are drawn to areas where a quality wilderness experience is available as well as the "newness" of the trail.

c. Reconstruction of the lower one-third mile of Jerrys Run Trail and the lower two miles of Ramseys Draft will have significant impacts. Since these sections are the most heavily used, improved trail conditions would probably bring increased use. Currently, log jams, debris piles and river bedrock discourage a number of day use visitors from venturing very far into the wilderness. Conversely, those users who hike into the area are impacting the environment by sliding down cut banks, blazing trees, removing obstructing limbs and developing side paths around obstacles. Trail reconstruction is recommended for those areas where impacts are occurring. This would resolve the undesirable impacts of soil compaction, erosion, social paths, etc., but natural obstacles would still discourage the "non-wilderness" user from venturing very far into the wilderness.

d. The present standard for minimum trail maintenance should continue. Few soil erosion problems have been noted on the trails, with the exception of flood damage on Ramseys Draft Trail and Jerrys Run Trail. Emphasis has been placed on brush cutting, which should continue in the future.

3. The development of an Information and Education program is necessary, with particular emphasis on "No Trace/Low Impact" ethics. This comprehensive program should display this ethic to current and potential users of the area. Here is a list of ideas for consideration as a starting point to build this program.

   a. Construction of trailhead bulletin boards at all entrance locations to emphasize the registration system, "No Trace" camping policy and other management problems.

   b. Utilize Wilderness Rangers, particularly during the heavy use seasons. Their emphasis should be on minimal impact techniques and the registration system. Rangers should be on duty during weekends and in the Fall of the year (October and November) when wilderness use is at its peak.

   c. Person-to-person contacts, as well as mailed inquiries from potential users, should be seen as opportunities to explain management goals and objectives, as well as problems in the area. Specific information should be forthcoming if requested. Visitors seeking non-wilderness should be directed to other forest opportunities.

   d. A school program should be developed and used which emphasizes a "Land Ethic" for local communities. By educating the next generation of wilderness enthusiasts, it should be possible to reduce future impacts.
   With 71 percent of the visitors currently coming from Virginia, this program could have significant impacts.

4. During the period of peak use in October and November, there should be an effort to distribute use to other areas. A number of users are taking advantage of the availability of trailhead conveniences (parking lots,, toilet facilities, etc.) to visit the area and are not seeking a wilderness experience. The construction of these amenities should be explored in other areas away from the wilderness resource.

Implementation of these recommendations will be the responsibility of the District Ranger. These recommendations can also be included in the wilderness management plan for Ramseys Draft. The Forest Supervisor who has the responsibility for the plan can also implement and/or approve these and other recommendations contained in the plan.

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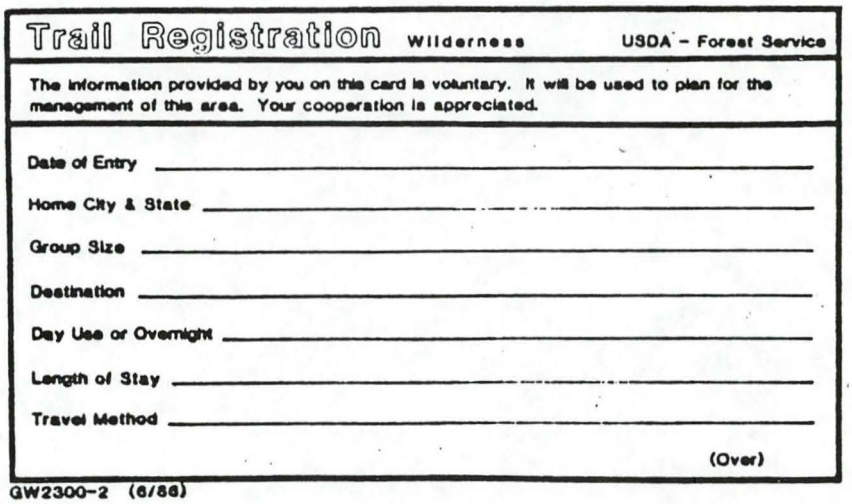
APPENDIX A



Trail Registration Wilderness USDA – Forest Service

The information provided by you on this card is voluntary. It will be used to plan for the management of this area. Your cooperation is appreciated.

Date of Entry _____

Home City & State _____

Group Size _____

Destination _____

Day Use or Overnight _____

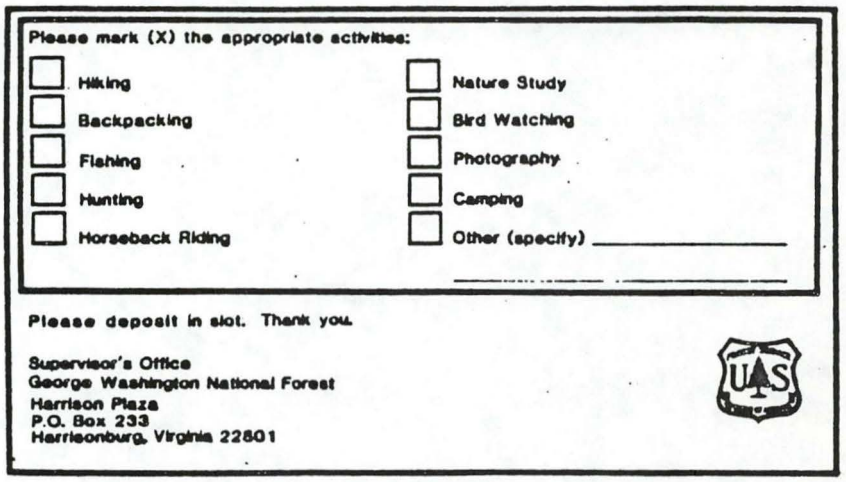
Length of Stay _____

Travel Method _____

(Over)

GW2300-2 (6/86)

(FRONT)



Please mark (X) the appropriate activities:

- ☐ Hiking
- ☐ Backpacking
- ☐ Fishing
- ☐ Hunting
- ☐ Horseback Riding
- ☐ Nature Study
- ☐ Bird Watching
- ☐ Photography
- ☐ Camping
- ☐ Other (specify) _____

Please deposit in slot. Thank you.

Supervisor's Office
George Washington National Forest
Harrison Plaza
P.O. Box 233
Harrisonburg, Virginia 22801

(BACK)

College of Forest and Recreation Resources
DEPARTMENT OF PARKS, RECREATION AND TOURISM MANAGEMENT
CLEMSON UNIVERSITY

WILDERNESS TRAIL SURVEY

Volunteer Name(s): _____ Date: _____

_____

_____

Trailhead Name: _____ Time Started: _____

Time Ended: _____

Method of Travel: _____

Question: 1) What is you home City or State?

_____

_____

2) What is your destination?

_____

_____

3) Day use or overnight?

_____

_____

4) Length of Stay?

_____

_____

5) How many in your group?

_____

_____

6) Activity participating in?

_____

_____

7) Why did you select this trail to use?

_____

_____

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APPENDIX C

RAMSEYS DRAFT CENSUS PROJECT

Validation Sheet

NAME _____

DATE _____ Day of Week _____

1 Registration Station (check one)

☐ Shenandoah Mountain

☐ Ramseys Draft

Weather Conditions _____

Total Time Spent (include hiking to each station, replenishing supplies, etc.) _____

Observation Start Time _____

Observation Finish Time _____

Observation	# In Group	Dayhikers or Backpackers?	Direction Headed	Time	Other Observations (age, sex, clothing, equipment, etc.?)	Hiker Passed Other Station	Registration Card Completed

RAMSEYS DRAFT CENSUS PROJECT

Check One

☐ Shenandoah Mountain

☐ Ramseys Draft

Validation Continuation Sheet

Name _____

Date _____

Page _____

Observation #	#In Group	Dayhikers or Backpackers?	Direction Headed	Time	Other Observations (age, sex, clothing, equipment, etc.?)	Hiker Passed Other Station	Registration Card Completed